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(56) Documents Cited

GB 2289186 A EP 0721266 A WO 99/55099 A
WO 97/37484 A WO 94/24629 A WO 00/08831 A

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(54) Abstract Title

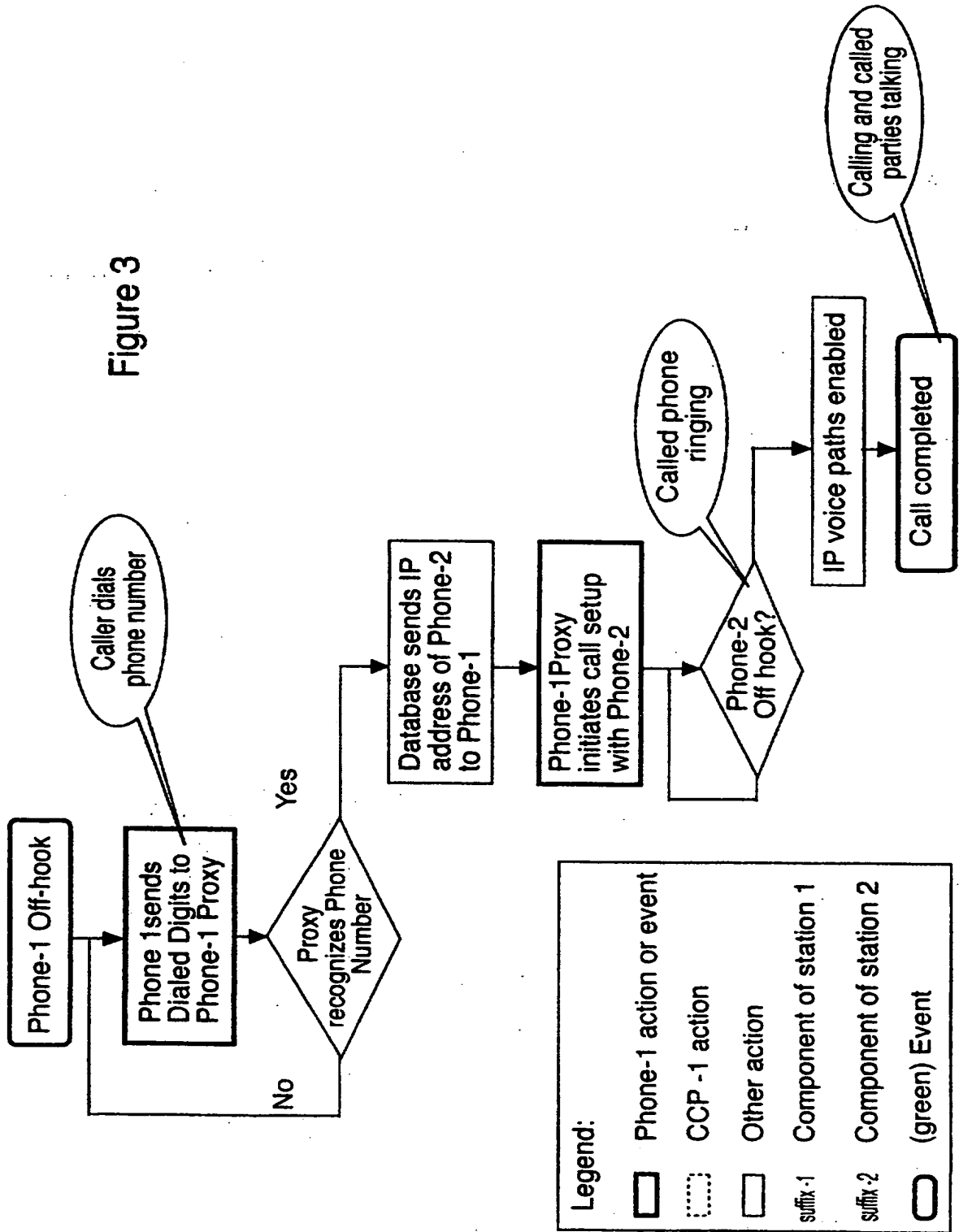
Communication system architecture for voice first collaboration

(57) A collaborative computer telephony system, comprising a communication network; a plurality of integrated computer telephony devices connected to the network and identified by unique IP addresses, at least two of the integrated computer telephony devices supporting collaboration application programs; an indicator on at least one of the integrated computer telephony devices; and a collaborate control program associated with each of the integrated computer telephony devices for detecting commonly supported ones of the collaboration application programs and in response activating the indicator.

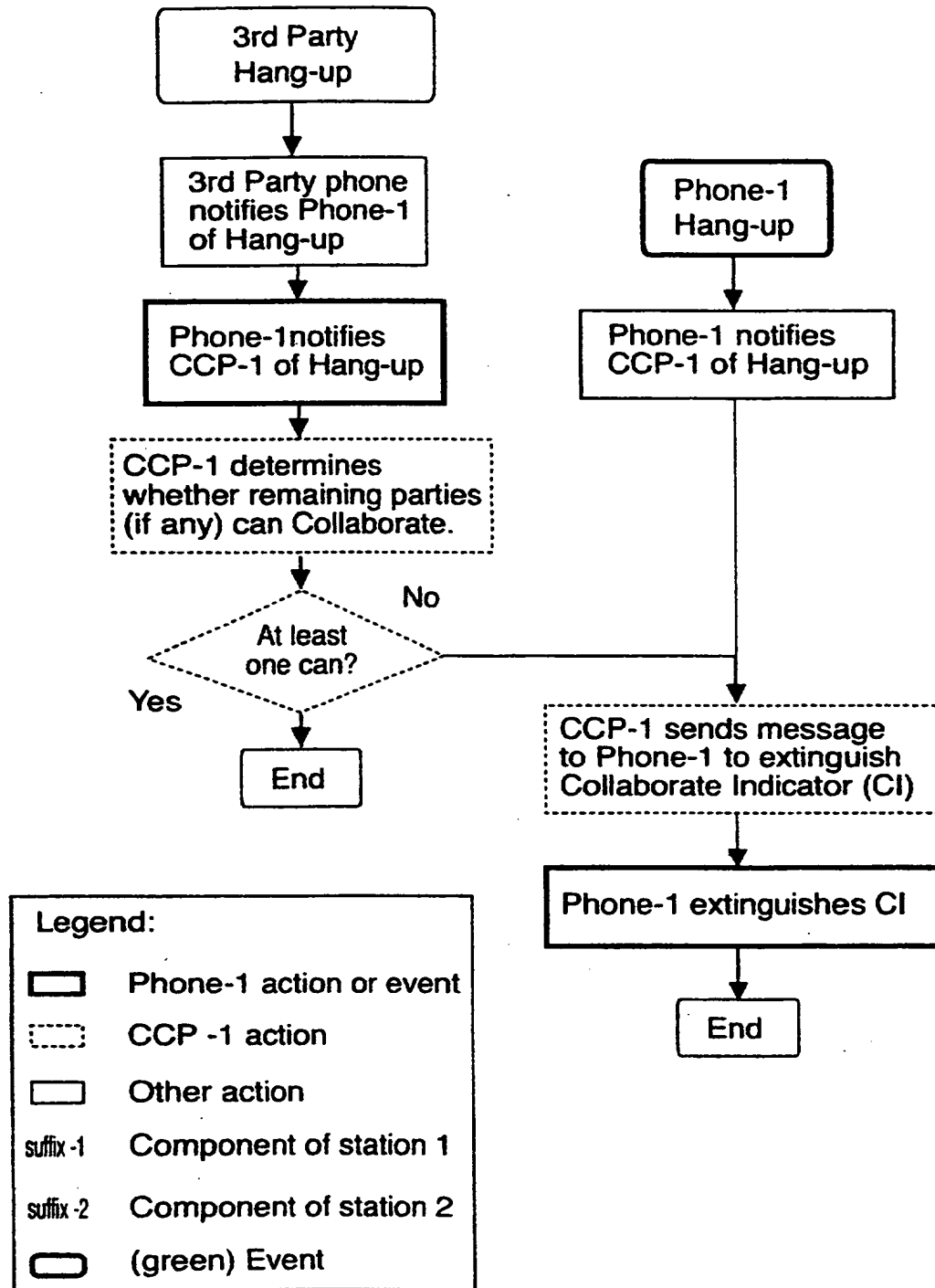
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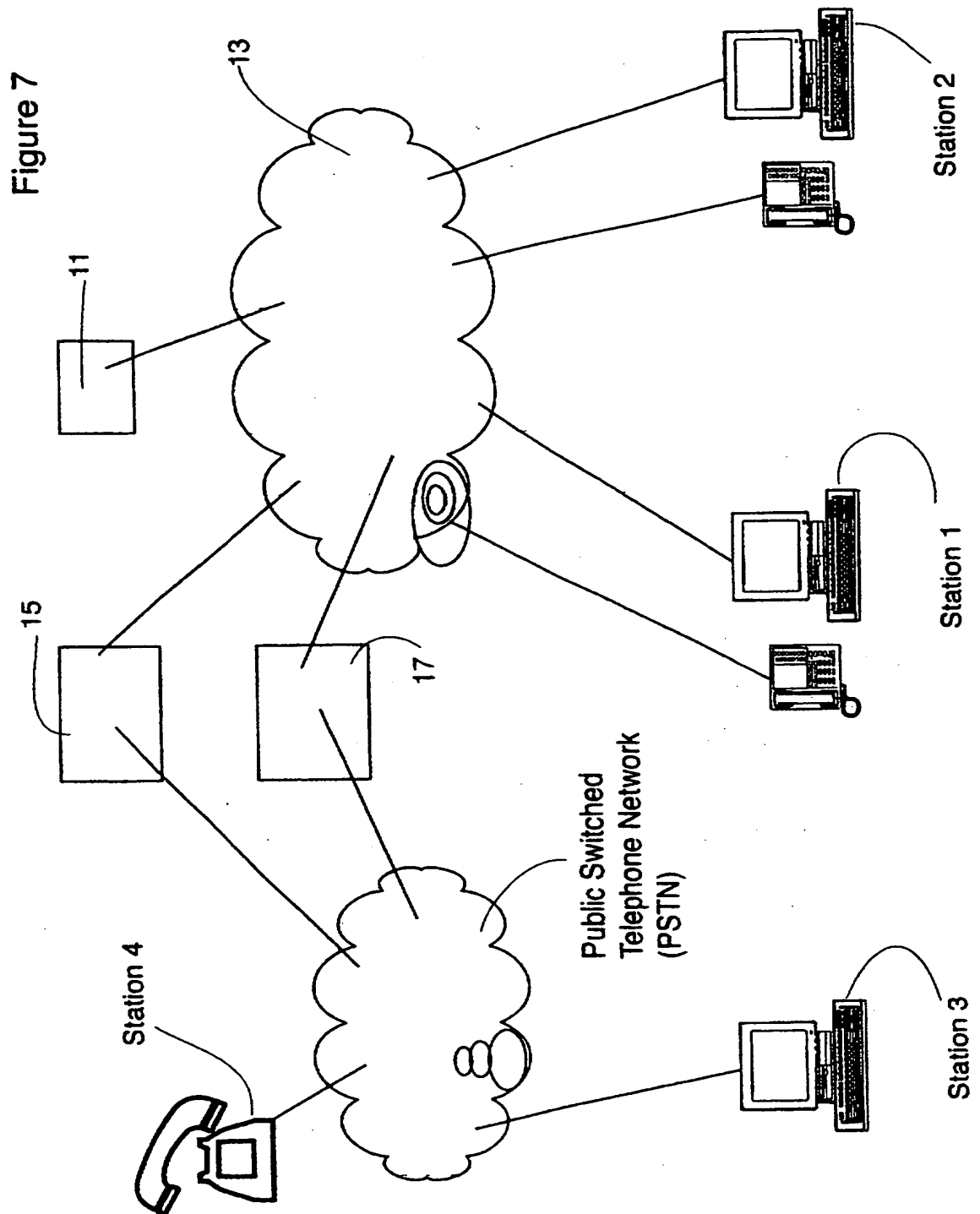
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

Figure 3



4/6 Figure 5





communications path exists between the parties involved. Voice communication can not take place until the setup process is complete. Using current technology, it is not uncommon for the parties to make a regular phone call in order to talk through the setup process.

5 SUMMARY OF THE INVENTION

According to the present invention, a system is provided for initiating a collaborative work-share environment between two or more parties to a telephone call, without complex and time consuming setup processes as are common in the prior art. In accordance with the preferred embodiment, each party to a telephone call is provided with a collaboration button
10 and an indicator on their telephone set. When the indicator is illuminated, the system is capable of establishing a work-share environment. In response to one of the parties activating the collaboration button, the system causes network enabled applications to run on the individual users' desktop computers so that the parties are able to share information between themselves, conduct a video conference, etc., while maintaining their initial voice connection.

15 Thus, the telephone is used in the usual way to make regular, voice-only, telephone calls. Once a call is established, the telephones communicate with each other to determine if they each are associated with equipment which would allow richer collaboration between their respective users. If such equipment is available then the indicator on at least one of the telephones is lit, indicating that richer collaboration is possible. If the talking parties decide
20 that they would like to share a document or set up a video conference, this may be initiated by either party pushing the collaboration button.

Once the button has been pushed, one of a number of subsequent scenarios are possible. In all cases, from a user perspective, the voice path is unaffected and the talking parties may continue uninterrupted conversation.

25 Some implementation examples are set forth below, without limitation to the scope of the invention. In its broadest aspects, the present invention is a method and apparatus for simple spontaneous setup of a shared workspace.

BRIEF DESCRIPTION OF THE DRAWINGS

30 A preferred embodiment of the present invention is described herein below with reference to the drawings in which:

Figure 1 is a diagram illustrating a preferred station arrangement including a telephone and a desktop PC, both of which are connected to a LAN;

A collaboration control program runs on each PC 3 associated with a telephone 1. This program has the capability of communicating over the LAN 5 with the phone 1 to control the collaborate indicator 7 and sense actuation of the collaborate button 9. The collaboration control program includes a list of all collaboration application programs installed which have been registered with the collaboration control program on the PC 3, including information about their capabilities and communication protocols (e.g. H.323). The collaboration control program has the capability of launching a collaboration application program, or, in the event that it is already running in the background, to bring the collaboration application program to the foreground. This is accomplished using well known capabilities of the PC Operating System.

The collaboration control program also has the ability to communicate with the collaboration control programs of remote PCs via the LAN 5. It has the capability to request (or respond to a request for) a list of collaboration application programs from a remote PC via the PC's Operating System. Finally, it has the capability to compare remote and local collaboration application programs and, by comparing supported protocols, determine whether the mutual collaboration application programs can inter-operate in a shared work environment.

With reference to Figure 2, two similar stations ("Station 1" and "Station 2"), of the variety shown in Figure 1, are interconnected over the LAN 5 and are supported by a common call control unit 11 for implementing various telephony applications. Operation of the call control unit 11 is beyond the scope of this disclosure, although the structure and operation thereof would be well known to a person of ordinary skill in the art. The call control unit 11 includes a plurality of Phone Proxies (software objects), respective ones of which are associated with telephones registered to the system. Each Phone Proxy maintains the call state for an associated telephone and includes a database containing both the telephone Number and IP Address of the phone as well as the IP address of any PC associated with the Phone (i.e. on the same user's desktop). This IP address is typically registered once, at the time of system installation.

Figure 3 illustrates only the basic steps of a call setup, call progress tone generation (dial, ringback, busy) having been omitted for ease of explanation. Also, normal call control exceptions (e.g. Called Party Busy, No Answer, etc.), and error handling routines, have also been omitted. The terms "Phone-1" and "Phone-2" refer to combinations of specific telephone hardware and associated control software proxies, wherein Phone-1 is the calling

7 remains illuminated provided that at least one other party remains in the call with the capability to collaborate with the initiating telephone (Phone-1).

Operation of the collaborate button 9 is set forth with reference to Figure 6, from which it will be noted that the button takes no action unless the collaborate indicator 7 is lit.

5 In response to user actuation of button 9, Phone-1 notifies its associated collaborate control program. If the local indicator 7 is extinguished, then no further action is taken. The step "Phone-1 CI lit?", may be omitted in response to user selection. If the local indicator 7 is illuminated, the collaborate control program determines whether there is more than one collaboration application program available. If not, then the collaborate control program
10 launches or brings the collaboration application to the foreground at the user's desktop. A similar message may be sent to the collaborate control program at the remote party so that the collaborating applications launch simultaneously. If more than one collaboration application program is available, then a dialog box is displayed at the user's desktop PC 3 listing the collaboration applications available. Once the user selects an application, program flow
15 returns to the collaborate control program for launching the application.

Referring to Figure 7, a general architecture is presented wherein the LAN is generalized to include the Internet 13. In this case, Station 1 and Station 2 can be located anywhere geographically provided that they have Internet, or other network access. Non-Internet communications terminals (e.g. terminals located at a private home) are represented
20 by Station 3 and Station 4.

Station 3 is illustrated as a PC with multimedia microphone and speakers and running an IP telephony protocol supported by an Internet Service Provider 15. Interconnection to the ISP is via the PSTN (Public Switched telephone Network) using an arbitrary protocol (e.g. IP / PPP / 33.6 Modem or ISDN BRI). In this scenario, the function of the collaboration control
25 program may be performed either by the ISP 15 or the PC in Station 3. If Station 1 calls Station 3, it will respond provided that it is running H.245 or other suitable protocol.

Station 4 is shown implementing a Plain Old telephone Service (POTS) termination. Station 1 can communicate with Station 4 via a PSTN gateway 17, in a well known manner. The gateway 17 may or may not respond to a collaboration control program request from
30 Station 1. In any event, the collaboration control program of Station 1 will not recognize collaborative capabilities and the collaborate indicator of Station 1 therefore remains un-illuminated.

with data systems to connect telephone and PC at the desktop. The telephone 1 and PC 3 may or may not be physically connected at the desktop. Further architectural detail of this implementation are not described but would be well known to a person of ordinary skill in the art.

The present invention can be implemented by remote computers connected over a network. Although the embodiment described hereinabove has been described with reference to a separate telephone, the telephone equipment can be integrated within the computer and the indicator and collaborative button can be provided by an input device of the computer e.g. a keyboard. The voice capability of the telephone can be provided by a microphone input into the computer as is well known in the art.

Since the present invention can be implemented by a computer program operating on a computer, the present invention encompasses a computer program and any form of carrier medium which can carry the computer program e.g. a storage medium such as a floppy disk, CD ROM, programmable memory device, or magnetic tape, or a signal such as optical signal or an electrical signal carried over a network such as the Internet.

All such alternative embodiments and variations are believed to be within the scope of the invention as defined by the claims appended hereto.

9. The system of claim 6, wherein said telephone is connected to said computer which in turn is connected directly to the network.

10. The system of claim 6, wherein said indicator further comprises a light on said telephone and said user input device is a button on said telephone.

11. The system of claim 6, wherein said indicator and user input device further comprise a graphical user interface on said computer.

12. In a collaborative computer telephony system including a communication network, a plurality of telephones and associated computers connected to the network and identified by respective IP addresses, at least two of said computers supporting collaboration application programs, and an indicator on at least one of said telephones, a method for controlling said indicator comprising the steps of:

15 exchanging IP addresses of said at least two computers over said network;
issuing a request from a first one of said computers to a second one of said computers for a list of said collaboration application programs supported by said second one of said computers;

20 comparing said list with a further list of supported ones of said collaboration application programs within said first computer; and

activating said indicator at said first telephone in the event of at least one commonly supported ones of said collaboration application in said first and second ones of said computers.



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Claims searched: 1-15

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Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.R): H4K (KOD3, KOD4, KOD8, KF42)
Int Cl (Ed.7): H04L (12/18) ; H04M (3/42, 3/56, 11/06) ; H04N (1/42)
Other: Online : wpi ; epodoc ; japio

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2 289 186 A (IBM Corporation) - see whole document	
A	EP 0 721 266 A2 (NCR International Inc) - see whole document	
A,E	WO 00/08831 A1 (Efusion Inc) - see whole document	
A	WO 99/55099 A1 (Northern Telecom) - see whole document	
A	WO 97/37484 A (Northern Telecom) - see whole document	
A	WO 94/24629 A (Intel Corporation) - see whole document	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.